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Declass Review by NIMA / DoD

PHOTOGRAPHIC INTERPRETATION REPORT

ANTIMISSILE TEST CENTER

SARY SHAGAN, USSR

CHANGES AND ADDITIONS [redacted] 25X1D

NPIC/R-21/62
February 1962

NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

~~TOP SECRET CHESS RUFF~~

PREFACE

This report, prepared as a result of NPIC Project JN-256/61 in answer to CIA requirement DDI/OSI/R-146/61, presents information on the Antimissile Test Center, Sary Shagan, USSR, derived from a study of 25X1D [redacted] KEYHOLE photography. The report supplements CIA/PIC/JR-1010/61 1/ and CIA/PIC/JR-3/61. 2/

INTRODUCTION

25X1D

Photography of the Sary Shagan Antimissile Test Center from KEYHOLE Mission [redacted] covers the Support Base, Launch Complex A, and Instrumentation Sites 10 and 11 (Figure 1). No new operational complexes have been added in the visible portions of the center since coverage of [redacted] but expansion is noted in the Main Housing Complex. Small scale and poor image quality precluded interpretation of Launch Complex A to the maximum desirable detail and precluded any interpretation of Instrumentation Sites 10 and 11. However, the road pattern and the relative size of areas of activity previously identified and reported on appear unchanged.

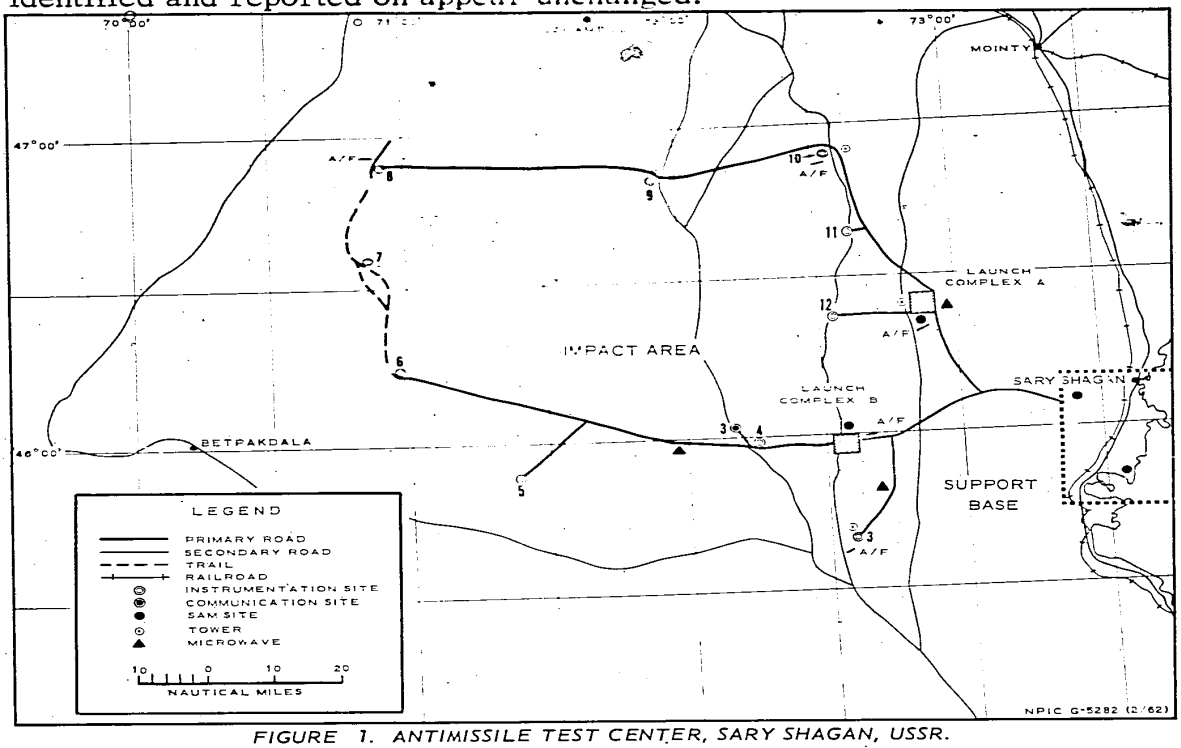

FIGURE 1. ANTIMISSILE TEST CENTER, SARY SHAGAN, USSR.

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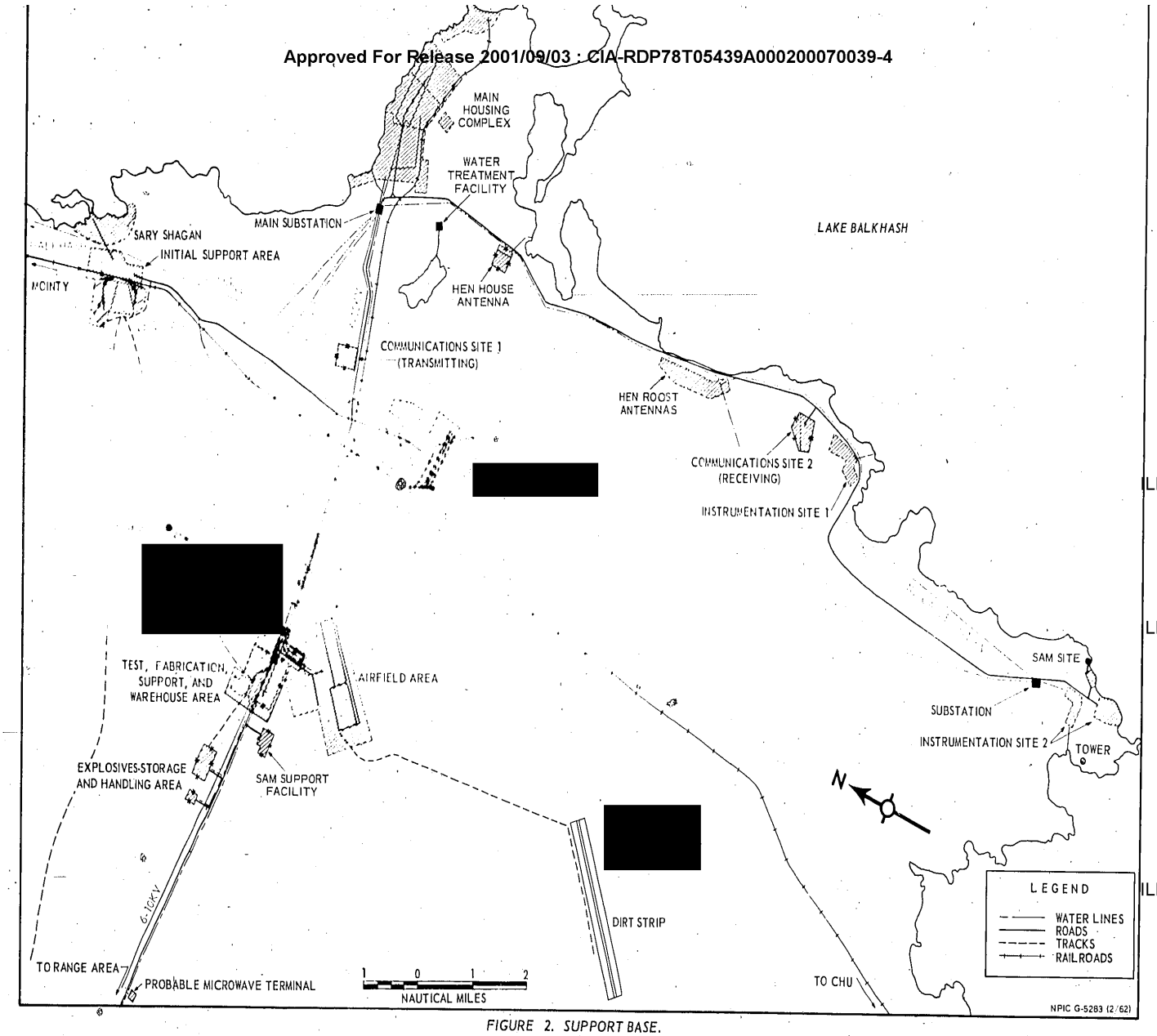

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FIGURE 2. SUPPORT BASE.

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Table 1. Building Data for [redacted]

Area	No of Bldg	Probable Range HQ Area: Floor Space Per Bldg (sq ft)	Total Floor Space (sq ft)
Original Housing Area	236	3,000	708,000
	90	11,700	1,053,000
	15	9,300	139,500
			1,900,500
New Housing Area	[redacted]	96,600	772,800
	80	35,000	2,800,000
	78	14,400	1,125,000
			4,697,800
Prob Range HQ Area	1	79,200	79,200
	2	90,000	180,000
	1	20,000	20,000
			279,200

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25X1D

In [redacted] the [redacted] Area was complete and appeared occupied. The popula[redacted]0,000 was based only on this area. East of this area the [redacted] rea was under construction. Of the visible structures in [redacted] Area, 63 appeared complete and 36 were in various stages [redacted] Incomplete coverage and clouds precluded further interpr[redacted] The photography of [redacted] showed that many buildings in the New Housing Area for which only initial construction or walls were visible in [redacted] appeared complete. The quality of this photography did not permit an accurate count of structures or computation of floor space. However, six of the large multifamily dwellings and eight smaller dwellings and/or administrative buildings had been completed.

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To accommodate further expansion, two areas (item 1, Figure 3) are available. One area between the two housing areas. If the pattern of completed buildings is used, this area could provide housing with approximately 2 million square feet of floor space. The second area, southeast of the New Housing Area and covering approximately 300 acres, may eventually be devoted to personnel housing.

Probable Range Headqua[redacted]ntrol Area. This area (item 2), which was under [redacted] just south of the New Housing Area, appeared [redacted] to be completed. This is a road-served, secured area [redacted] large administrative-type buildings arranged to form [redacted]d. The area also contains a quarters-type structure [redacted] buildings, vehicle-parking facilities, and a 35-foot-diam[redacted] storage tank. A probable cable scar appears to conn[redacted] the HEN HOUSE antenna area (formerly called Radar Site [redacted] Fabrication, Support, and Warehouse Area.

Probable Storage Are[redacted]3) south of the New Housing Area, is road and rail [redacted]asures 9,100 feet on a side. It contains four probable [redacted]anks and several small support structures and appears [redacted] by conduit to a possible diesel power generator building.

Two heating plants [redacted] first time on the [redacted] coverage. One plant, [redacted]tern part of the Warehouse Area (item 9), was under [redacted] The second plant (item 4), on the southeastern [redacted] Housing Area was cloud covered in [redacted] and the small [redacted] its identification on the [redacted] photography. Both [redacted] rail served and measure 125 by 75 feet and approximately [redacted] with 225-foot stacks. The plants appear to be situated to [redacted] only for the adjacent housing area. The plant near the New [redacted] appears to be the only operational plant. Approximately [redacted] east of this heating plant is a possible diesel power generator building, 270 by 40 feet and approximately 45 feet high.

Concrete-Fabrication Area. This area (item 5), covering approximately 110 acres and road and rail served, is at the eastern end of the Main Housing Complex. It contains facilities for casting concrete building components and includes a probable water-pumping station, vehicle-parking facilities, and open storage. The area was also observed in [redacted]

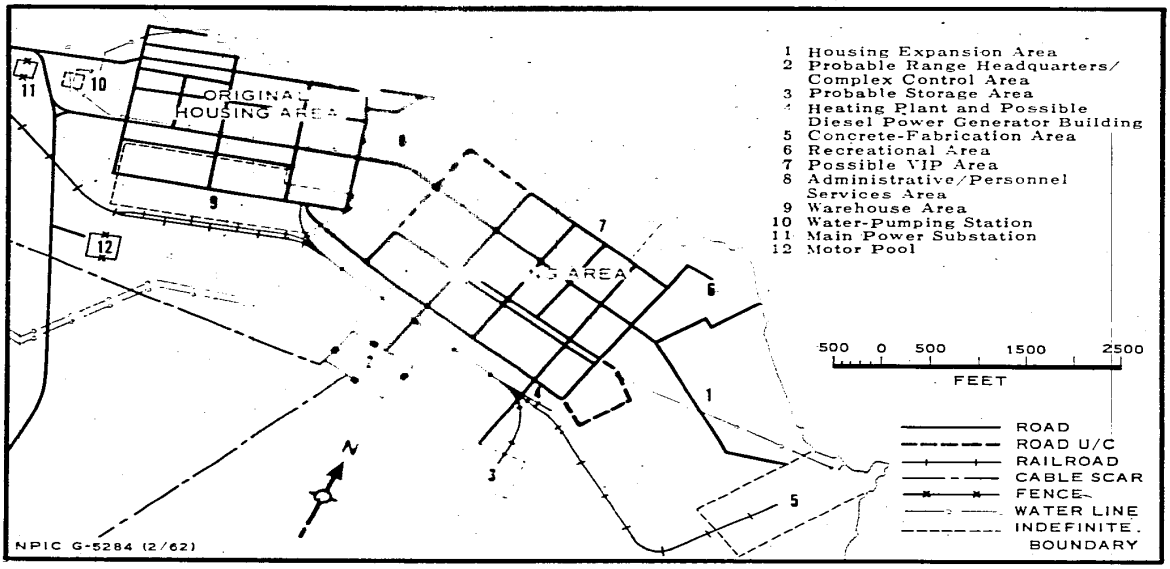

FIGURE 3 FACILITIES IN MAIN HOUSING COMPLEX.

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Administrative/Personnel Services Area. This area (item 8) contains three main buildings, two of which appear complete externally. Seven 25X1D other structures of varying sizes are north of the main buildings. In [redacted] 25X1D [redacted] one of the main buildings and a large support building were under construction. The other buildings had not been started.

25X1D Warehouse Area. This area (item 9) has been completed since [redacted] 25X1D [redacted] It is rail and road served and contains 15 semiburied storage 25X1D buildings, 2 large warehouses (one of which is new since [redacted] 2 smaller storage buildings, approximately 10 support-type buildings of various sizes, and a motor pool. The railroad within this area has been 25X1D extended since [redacted] to the Concrete-Fabrication Area. There are multiple spurs at the Warehouse Area and just south of the New Housing Area.

Water-Treatment Facility. This facility, approximately one nm south 25X1D of the power substation, was under construction in [redacted] Now completed, the facility consists of two parallel buildings approximately 200 by 70 feet and several small support buildings, road served, and is connected to Lake Balkhash and the Warehouse Area by two parallel buried 25X1D conduits. The buried conduits were present in [redacted] A possible conduit also can be traced to the HEN HOUSE antenna area. Just west of 25X1D the Water-Treatment Facility is a large lake (present in [redacted] which appears to be related to the facility.

Test, Fabrication, Support, and Warehouse Area

Within the Fabrication Facility, the two large buildings (185 by 140 25X1D feet and 125 by 125 feet) which were under construction in [redacted] now appear completed (Figure 4). A new building has been erected across the access road from the 125- by 125-foot building. In the Warehouse Facility, another warehouse has been constructed and appears to be completed.

FIGURE 4. AIRFIELD AND NEARBY FACILITIES (photography of [redacted]

25X1D

SAM Support Facility

This facility, road served and secured, is 1.6 nm northwest of the center of the airfield and just south of the road leading to the Range Area
25X1D (Figure 2). At the time of the [redacted] coverage, a portion of the present road pattern and footings for the checkout building and for four of the smaller storage buildings were under construction. The connecting road-
25X1D way and fencing had not been constructed. On the [redacted] photography, only four structures and a portion of the road pattern were visible. Snow cover and the small scale precluded assigning a definite function to
25X1D the area at that time. The [redacted] photography is clear enough for the area to be identified as a SAM support facility (Figure 4). The facility appears completed.

Airfield and Nearby Facilities

The facilities in the housing and support area for the airfield appear completed (Figure 4). Additions to the airfield include a 2,600-foot extension to the west end of the taxiway/parking apron; two 400- by 160-foot aprons north of the runway on each of the end connecting taxiways; an unprepared area used for aircraft parking at the southwest end and north of the runway (between the runway and taxiway/parking apron); a circular,
25X1D 2,000-foot-diameter, cleared area (seen on the [redacted] photography) 3,000 feet south of the runway. No definite purpose can be ascribed to this
25X1D area. By [redacted] another cleared area, 2,000 by 1,200 feet, had been added to the southwest quarter of the circular area. (These cleared areas are not shown on Figure 4.)

The 16,300-foot dirt strip appears unchanged. Two possible marker beacons/instrumentation sites, aligned with and southwest of the dirt strip, have been constructed or are under construction; one is 3,000 and the other 10,000 feet from the dirt strip.

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HEN HOUSE Antenna

The area of the HEN HOUSE Antenna (previously called Radar Site 1 1/) shows some changes and additions since [redacted] (Heavy snow cover on the photography of [redacted] precluded observation of any changes.)

The installation was not yet completed in [redacted] as evidenced by numerous crates in front of the antenna structure and the early construction stage of support facilities. On the [redacted] photography, an unidentified object casting a heavy shadow was visible at the middle of the antenna face. By [redacted] the support facilities had been completed, and the crates and the unidentified object had been removed.

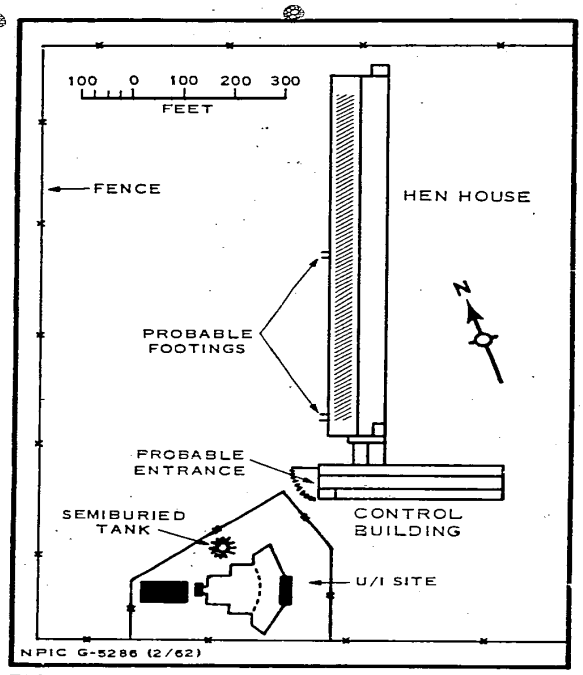

FIGURE 5. HEN HOUSE ANTENNA. Changes since [redacted] are shown in red.

The HEN HOUSE installation (Figure 5) now consists principally of an antenna structure, an adjoining control building, and an unidentified, recently constructed fenced site in the southwest corner of the area. Also present are 17 major support structures (not shown on the figure). A water intake line and an effluent line run directly between the area and Lake Balkhash. A possible water line, present in [redacted] but not identified from that photography, extends from the Water-Treatment Facility near the Main Housing Complex to storage tanks in the HEN HOUSE area. The

use of two different water sources may be related to quality and/or utilization requirements. A cable line leads from the recently completed Probable Range Headquarters Area to the HEN HOUSE control building.

25X1D Probable footings for the now-removed unidentified object at the middle of the antenna face are visible on the [redacted] photography. Similar footings are adjacent to the south end of the antenna face.

25X1D In [redacted] earth was being removed by a bulldozer from the area in front of the control building. This area is now probably a below grade vehicular or pedestrian entrance.

The separately fenced site in the southwest corner of the area contains an unidentified, roughly described triangular-shaped facility; a one-story, flat-roofed structure 90 by 60 feet; and a 30-foot-diameter semiburied storage tank. If the triangular-shaped facility were considered
25X1D a sector of a circle, its arc angle would be [redacted] 180 feet; arc,
25X1D [redacted] and chord, 225 feet. At the position of the arc angle is a low, thin rectangular structure. The radial extremities ("sides") of the site are notched, or stepped. In the center of the arc is a low, narrow rectangular structure approximately four times the size of the structure at the arc angle. In a cross-sectional view of this facility, which appears to be constructed of compacted earth, the structure at the arc angle is at ground level, and for 120 feet the facility gradually inclines upward (to the dashed line on Figure 5). The rear portion of the facility (east of the dashed line) inclines more sharply to a peak at the position of the arc.

The presence of this separately fenced site in HEN HOUSE area suggests that the site has an operational or electronic function. Perpendicular bisectors of the unidentified facility and of the antenna face have the same azimuth. In configuration, the facility resembles an outdoor orientation/training installation.

HEN ROOST Antennas

The two HEN ROOST antenna installations (which make up what was previously called Radar Site 2 1/) were covered by excellent quality photography in [redacted] 25X1D (Figure 6).

HEN ROOST NORTH appears the same as in [redacted] 25X1D HEN ROOST SOUTH, however, previously thought to be similar in design to the northern installation, appears on the better quality [redacted] 25X1D photography to be different in design from HEN ROOST NORTH. Because of their partially similar and partially different characteristics, the two antennas appear to be separate units of one antenna system.

Table 2 gives comparative data on the two installations.

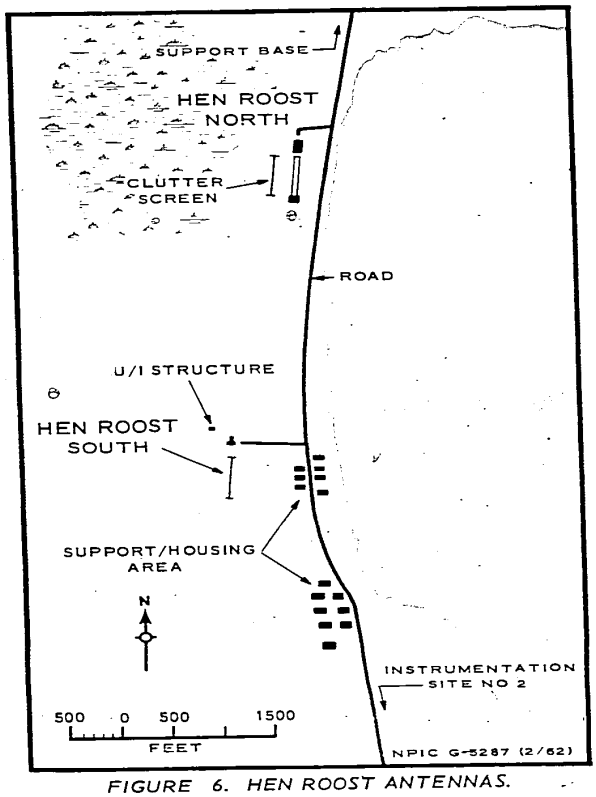

FIGURE 6. HEN ROOST ANTENNAS.

Table 2. Data on HEN ROOST Antennas

Item	HEN ROOST NORTH	HEN ROOST SOUTH
Reflector	510 by 65 ft	510 by 65 ft
Feed	Massive	None visible
Clutter screen	620 ft long	None visible
Control bldg	Rectangular, 20,000 sq ft of floor space	T-shaped, 30,000 sq ft of floor space
Support bldgs	6 minor	2 housing/support areas with total floor space of 162,000 sq ft (one area, 7 buildings, 24,000 sq ft; other area, 7 buildings, 138,000 sq ft)
Housing area	None	
Orientation	[redacted] 25X1D	[redacted] 25X1D

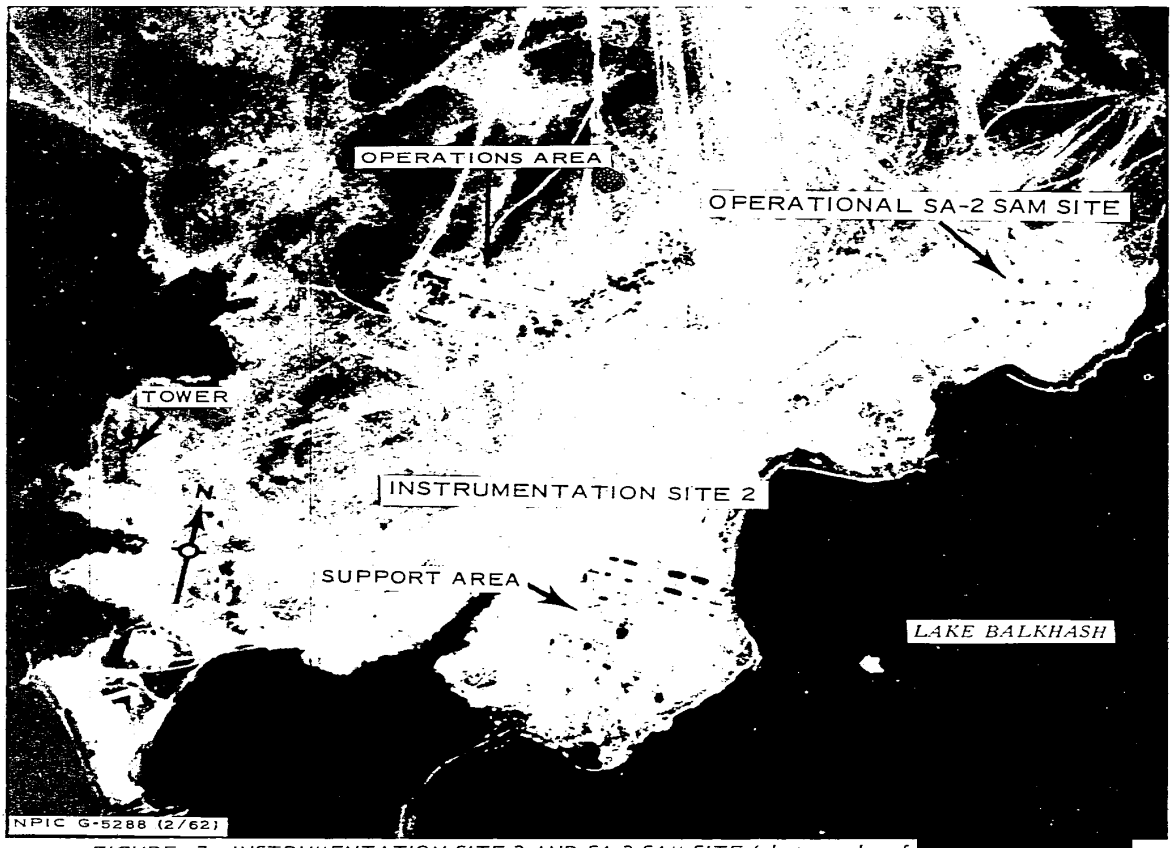

FIGURE 7. INSTRUMENTATION SITE 2 AND SA-2 SAM SITE (photography of [redacted]) 25X1D

Instrumentation Site 2 and SA-2 SAM Site

25X1D Instrumentation Site 2 appears the same as in [redacted] The
25X1D possible SAM site observed in [redacted] near this instrumentation
site, on the shore of Lake Balkhash, has been definitely identified on the
25X1D [redacted] coverage as an operational SA-2 SAM site (Figure 7).

LAUNCH COMPLEX A

25X1B [redacted]

Majority PI Interpretation

Launch Complex A was covered by fair-quality photography in 25X1D [redacted] No significant changes were noted in the Headquarters and Administration Area, the Electronics Area, the Probable Missile Support Area, the Possible Central Control Area, the Possible Operational Support Area, or the two Unidentified Areas. 1/

25X1D The Surface-to-Air Missile (SAM) Launch Area initially identified on the coverage of [redacted] contained two launch sites (Launch Sites 1 25X1D and 2, Figure 8). Expansion of this area was observed on the [redacted] 25X1D [redacted] coverage. 2/ The [redacted] photography shows that the 25X1D expansion noted in [redacted] consists of two additional launch sites 25X1D (Sites 3 and 4) similar to Sites 1 and 2, a road-served unidentified site (Site A) 2,400 feet east of Launch Sites 1 and 2 containing one and possibly two buildings, and a second road-served unidentified site (Site B) 2,400 feet southwest of Launch Sites 3 and 4 containing one possible building. The launch sites differ from hexadic SA-2 sites in dimensions (Table 3), but were originally reported as of the SA-2 type owing to site layout, namely, six launch points arranged in a fan-shaped pattern around a centrally located control area.

The available photography precludes giving positive details about launcher positions or central control positions, that is, whether these positions are revetments or pads. The exact alignment of the service roads to the launch positions is difficult to determine. Also, it cannot be determined positively that each site contains six launch positions; however, either five or six launch positions are at each site.

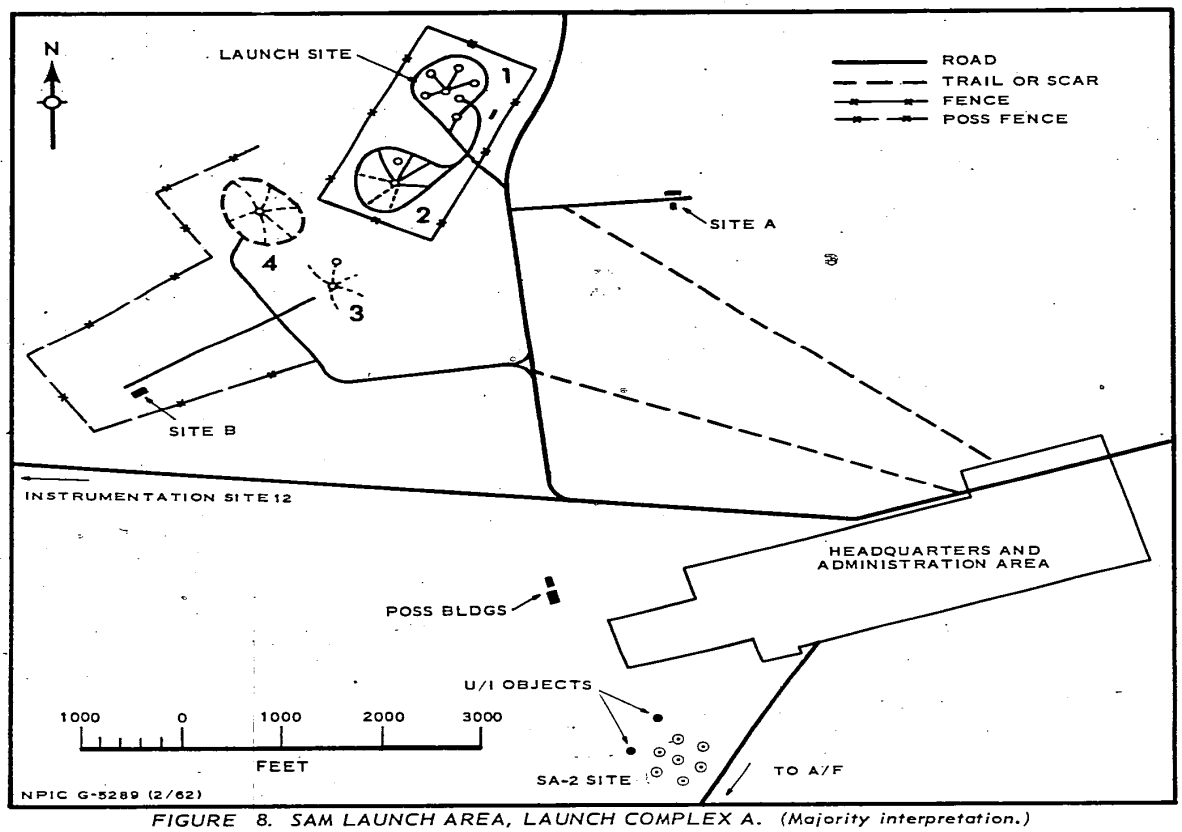

FIGURE 8. SAM LAUNCH AREA, LAUNCH COMPLEX A. (Majority interpretation.)

Table 3. Comparison of SA-2 SAM Sites With SAM Sites in Complex A

Item	SA-2 SAM SITES	SAM SITES IN COMPLEX A
Ring road	750 ft diam (varies)	900-1,000 ft (varies)
Launcher area	60 ft diam (min)	90-100 ft diam
Distance from launcher to control area	250 ft (max)	315 ft (approx)

Although the launch sites of Launch Complex A differ from SA-2 sites, they are positive evidence of a SAM system of some type -- probably an antimissile-missile (AMM) system. The four launch sites appear to be arranged in two pairs, each site within a pair being 1,200 feet apart, center to center. The pairing is evidenced by the difference in construction time of each pair and by the fact that Sites 1 and 2 were built in early 25X1D [redacted] and enclosed by a security fence. Possible fencing is also evident around part of Sites 3 and 4 and Site B.

Although SAM sites have not been observed elsewhere in a grouping or alignment similar to that of the four at Launch Complex A, they have been observed in pairs at the Kapustin Yar/Vladimirovka Missile Test Center (in the SA-2 Troop Training Launch Area and the Probable SA-3 SAM Launch Area) 3/, as well as at the SAM Launch Complex of the 25X1D Shuang-ch'eng-tzu Missile Center in China (seen on [redacted] KEYHOLE photography).

Site A and Site B are approximately 2,400 feet from Launch Sites 1 and 2, and 3 and 4, respectively. The two sites are similar in appearance in that both are road served, include one or two buildings, and are similarly positioned geometrically with respect to the pair of launch sites each is associated with (Figure 9). The functions of Sites A and B appear to be direct support of the launch sites. The geometric pattern formed suggests that they are instrumentation facilities such as missile tracking radars or possibly guidance facilities though no other details of an instrumentation or guidance nature are discernible on

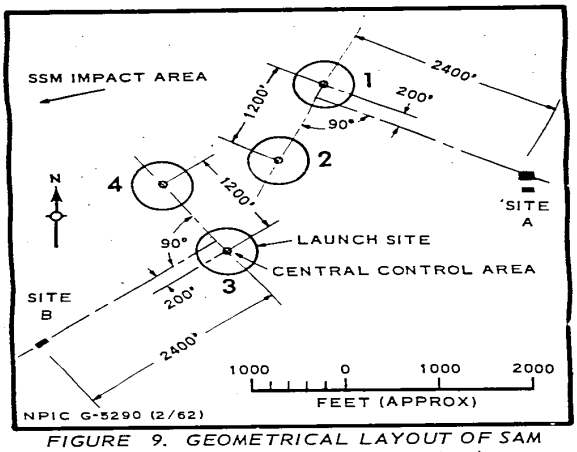

FIGURE 9. GEOMETRICAL LAYOUT OF SAM LAUNCH AREA. (Majority interpretation.)

the photography. There is evidence of scarring of an undetermined nature northwest of the building at Site B.

The chronological development of the various sites comprising the SAM Launch Area of Launch Complex A, as evidenced on TALENT and KEYHOLE photography, is presented in Table 4.

Table 4. Chronological Development of SAM Launch Area

25X1D

Item	[redacted]		
Launch Sites 1 & 2	Complete or nearly complete	Complete	Complete
Launch Sites 3 & 4	No evidence	Under construction	Complete or nearly complete
Site A	No evidence	Complete or nearly complete	Complete
Site B	No evidence	Under construction	Complete or nearly complete

CIA PI Interpretation

CIA PI analysts believe that in the majority interpretation, above, the description of and function ascribed to certain facilities in Launch Complex A are incongruent with the features observed on the photography. Specific items include the following:

1. Total number of launch sites and their construction status.
2. Construction status and function of Sites A and B.
3. Chronological development of the SAM Launch Area.
4. Importance of "pairing" of sites.
5. Function of the "system."

CIA PI analysts believe that five launch sites are located in the southwestern section of Launch Complex A (Figure 10). Sites 1, 2, 3, and 4 are definite sites; site 5 is labeled "possible" because of its early

Although the launch sites of Launch Complex A differ from SA-2 sites, they are positive evidence of a SAM system of some type -- probably an antimissile-missile (AMM) system. The four launch sites appear to be arranged in two pairs, each site within a pair being 1,200 feet apart, center to center. The pairing is evidenced by the difference in construction time of each pair and by the fact that Sites 1 and 2 were built in early 25X1D [redacted] and enclosed by a security fence. Possible fencing is also evident around part of Sites 3 and 4 and Site B.

Although SAM sites have not been observed elsewhere in a grouping or alignment similar to that of the four at Launch Complex A, they have been observed in pairs at the Kapustin Yar/Vladimirovka Missile Test Center (in the SA-2 Troop Training Launch Area and the Probable SA-3 SAM Launch Area) 3/, as well as at the SAM Launch Complex of the 25X1D Shuang-ch'eng-tzu Missile Center in China (seen on [redacted] KEYHOLE photography).

Site A and Site B are approximately 2,400 feet from Launch Sites 1 and 2, and 3 and 4, respectively. The two sites are similar in appearance in that both are road served, include one or two buildings, and are similarly positioned geometrically with respect to the pair of launch sites each is associated with (Figure 9). The functions of Sites A and B appear to be direct support of the launch sites. The geometric pattern formed suggests that they are instrumentation facilities such as missile tracking radars or possibly guidance facilities though no other details of an instrumentation or guidance nature are discernible on

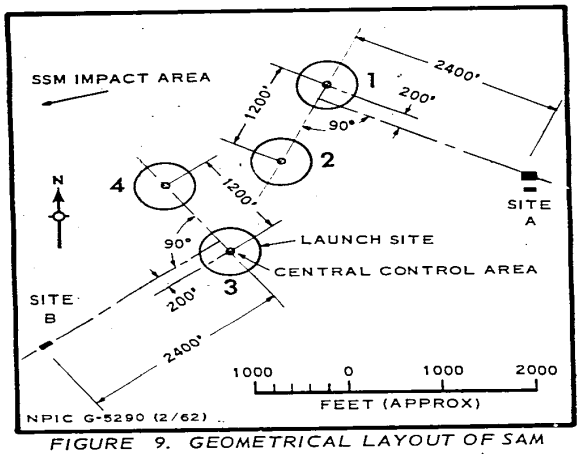

FIGURE 9. GEOMETRICAL LAYOUT OF SAM LAUNCH AREA. (Majority interpretation.)

the photography. There is evidence of scarring of an undetermined nature northwest of the building at Site B.

The chronological development of the various sites comprising the SAM Launch Area of Launch Complex A, as evidenced on TALENT and KEYHOLE photography, is presented in Table 4.

Table 4. Chronological Development of SAM Launch Area

25X1D

Item	[redacted]		
Launch Sites 1 & 2	Complete or nearly complete	Complete	Complete
Launch Sites 3 & 4	No evidence	Under construction	Complete or nearly complete
Site A	No evidence	Complete or nearly complete	Complete
Site B	No evidence	Under construction	Complete or nearly complete

CIA PI Interpretation

CIA PI analysts believe that in the majority interpretation, above, the description of and function ascribed to certain facilities in Launch Complex A are incongruent with the features observed on the photography. Specific items include the following:

1. Total number of launch sites and their construction status.
2. Construction status and function of Sites A and B.
3. Chronological development of the SAM Launch Area.
4. Importance of "pairing" of sites.
5. Function of the "system."

CIA PI analysts believe that five launch sites are located in the southwestern section of Launch Complex A (Figure 10). Sites 1, 2, 3, and 4 are definite sites; site 5 is labeled "possible" because of its early

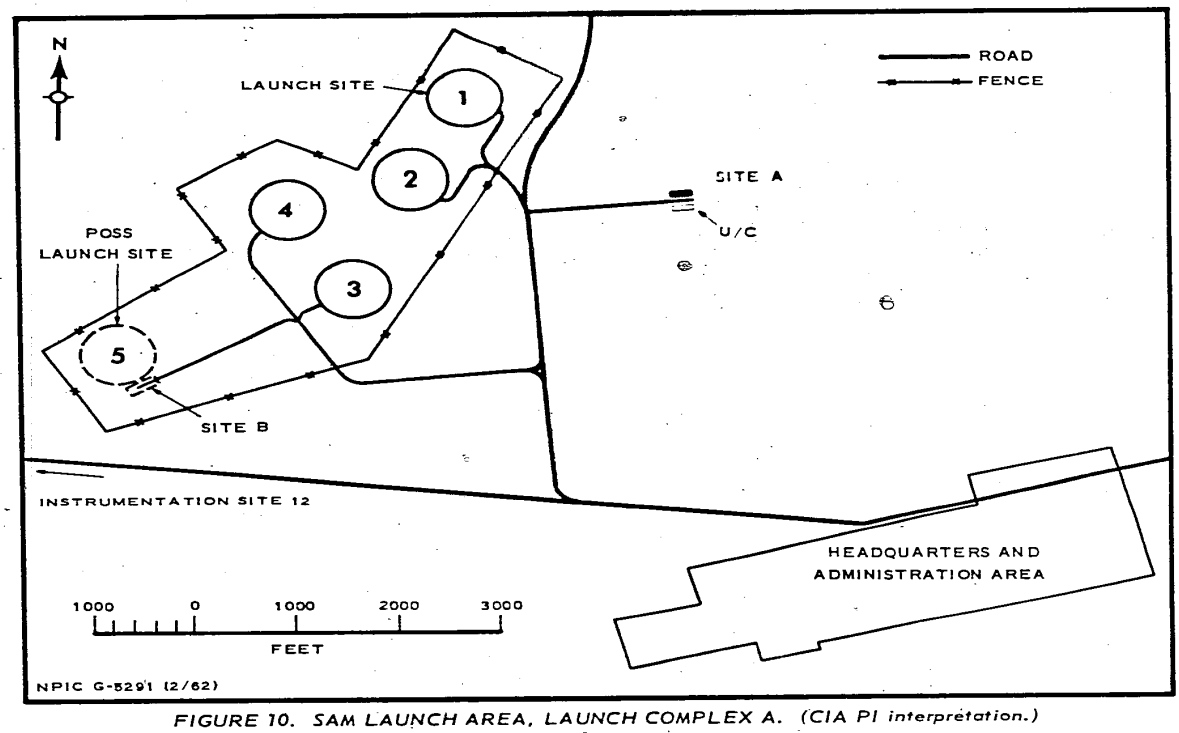

FIGURE 10. SAM LAUNCH AREA, LAUNCH COMPLEX A. (CIA PI interpretation.)

construction stage. The positioning of the road within the fence (in the western section of the area), along with the shape and extent of the construction activity north of the road, support the contention that a launch site (Site 5) is being built.

Site A consists of a long, low, flat-roofed structure parallel to and north of its service road and a similar structure under early construction south of the road. The location of Site A, along with its composition, suggests its use for missile storage and is somewhat inappropriate for a missile track radar or guidance function.

Site B (described as similar to Site A in the majority interpretation, above) has unidentified activity near the terminus of its service road. This

activity did not, at the time of the photography, resemble a building or buildings under construction. It could be something as ordinary as a parking area for vehicles used for constructing Launch Site 5.

The chronological development of the launch area, as seen by CIA PI analysts, is given in Table 5.

Table 5. Chronological Development of SAM Launch Area

25X1D

Area	[redacted]		
Launch Site 1	Under construction	Possibly complete	Complete
Launch Site 2	Under construction	Possibly complete	Complete
Launch Site 3	No evidence	Under construction	Possibly complete
Launch Site 4	No evidence	Under construction	Under construction
Poss Launch Site 5	No evidence	Possibly under construction	Under construction
Site A	No evidence	Under construction	Under construction

The construction chronology of the area follows the traditional Soviet development pattern for a missile system. Launch Sites 1 and 2 were first built (without supporting facilities) to match missile hardware to launch-facility design (or vice versa) and to determine the needs for ground support equipment. The later construction of other launch sites and of Site A appears to indicate the development of a prototype operational system. A large acquisition radar would be required for this system, but none has been specifically identified or reported to be associated with this system.

The "pairing" of the sites, as described in the majority interpretation, has no importance beyond showing the R&D phase of Launch Sites 1 and 2. The comparison of these sites to Kapustin Yar sites is excellent, but no pairing can be noted at the missile center in China. The two SAM launch sites at the Chinese missile center are over a mile apart.

The "system," as described in the majority interpretation, is a probable AMM system. CIA PI analysts, while agreeing that the location of